

1 This listing of claims will replace all prior versions, and listings, of claims
2 in the application.

3
4 **Listing of Claims:**

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6 Claim 1 (Canceled)

7
8 Claim 2 (Currently amended): A processor-readable medium as recited
9 in claim [[1]]15, wherein generating the data profile comprises further instructions
10 for:

11 configuring a look-up table with signal data, wherein the signal data are
12 associated with focusing on locations within the label region.

13
14 Claim 3 (Currently amended): A processor-readable medium as recited
15 in claim [[1]]15, wherein generating the data profile comprises further instructions
16 for:

17 configuring a function to generate signal data, wherein the function
18 associates locations within the label region with appropriate signals.

19
20 Claim 4 (Original): A processor-readable medium as recited in claim 3,
21 wherein configuring a function comprises further instructions for:
22 generating coefficient data for a Fourier series.

1 Claim 5 (Original): A processor-readable medium as recited in claim 3,
2 wherein configuring a function comprises further instructions for:
3 generating coefficient data for a polynomial series.
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5 Claim 6 (Currently amended): A processor-readable medium as recited
6 in claim ~~[[1]]~~15, wherein the generating comprises further instructions for:

7 applying an AC component of a signal to the actuator as the optical disc
8 turns, wherein the AC component causes the optics to pass through a focal point in
9 both directions on each cycle of the AC component; and

10 recording a voltage into a voltage data look-up table which was applied to
11 the actuator and which was associated with a SUM signal peak which resulted
12 from the passage of the optics through the focal point.
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14 Claim 7 (Original): A processor-readable medium as recited in claim 6
15 wherein the sum signal peak is determined by measuring sides of the sum signal
16 peak and averaged.
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18 Claim 8 (Original): A processor-readable medium as recited in claim 6,
19 comprising additional instructions for adjusting the recorded voltage by a phase
20 shift corresponding to a lag time associated with the operation of the actuator.
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1 Claim 9 (Original): A processor-readable medium as recited in claim 6,
2 comprising further instructions for:

3 calibrating the actuator to determine an angle by which the actuator lags an
4 input signal for at least one frequency; and
5 adjusting the recorded voltage by the angle.

6
7 Claim 10 (Original): A processor-readable medium as recited in claim 6,
8 wherein applying the AC component of the signal comprises instructions to repeat
9 the AC signal at a frequency which results in at least eight SUM signal peaks per
10 revolution of the optical disc.

11
12 Claim 11 (Previously presented): A processor-readable medium
13 comprising processor-executable instructions for focusing optics, the processor-
14 executable instructions comprising instructions for:

15 generating a data profile, wherein the data profile is configured to provide
16 signals for operation of an actuator, wherein the signals result in focus of the
17 optics on a label region of an optical disc;

18 printing an image on the label region of the optical disc while focusing the
19 optics by applying signals to the actuator according to the data profile;

20 calibrating the actuator to determine an angle by which the actuator lags an
21 input signal for frequencies associated with printing the image at least two radial
22 distances from a hub of the optical disc; and

23 organizing the data profile according to the at least two radial distances and
24 according to signals resulting in focus in a plurality of sectors of the optical disc.

25

1 Claim 12 (Original): A processor-readable medium as recited in claim 11,
2 wherein calibrating the actuator comprises further instructions for:

3 applying an AC signal to the actuator, wherein the AC signal results in the
4 actuator moving the optics back and forth through a focal point causing a plurality
5 of SUM signal peaks;

6 adjusting a DC offset to the signal until the plurality of SUM signal peaks
7 are evenly space; and

8 measuring an angle between a SUM signal peak and an associated mid-
9 point of the AC signal.

10
11 Claim 13 (Original): A processor-readable medium as recited in claim 12,
12 wherein applying the AC component of the signal comprises instructions for
13 applying a triangle wave to the actuator.

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15 Claim 14 (Original): A processor-readable medium as recited in claim 11,
16 comprising further instructions for:

17 moving the optics toward a hub location of the optical disc; and

18 maintaining the optical disc in a stationary condition during the calibrating.
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1 Claim 15 (Previously presented): A processor-readable medium
2 comprising processor-executable instructions for focusing optics, the processor-
3 executable instructions comprising instructions for:

4 generating a data profile, wherein the data profile is configured to provide
5 signals for operation of an actuator, wherein the signals result in focus of the
6 optics on a label region of an optical disc; and

7 printing an image on the label region of the optical disc while focusing the
8 optics by applying signals to the actuator according to the data profile;

9 wherein generating the data profile comprises instructions for
10 including data within the data profile associated with at least two radial
11 distances from a center of the optical disc, wherein the data associated with
12 each radial distance is phase-shifted according to a lag-time of the actuator
13 at a frequency associated with printing a portion of the image on the label
14 region of the optical disc located approximately at the radial distance.

15
16 Claim 16 (Currently amended): A processor-readable medium as recited
17 in claim ~~[[1]]~~15, comprising further instructions for:

18 indexing the data profile according to an angular orientation of the optical
19 disc; and

20 fetching data from the data profile according to the angular orientation of
21 the optical disc during the printing of the image on the label region.

1 Claim 17 (Currently amended): A processor-readable medium as recited
2 in claim [[1]]15, wherein printing the image comprises further instructions for:
3 interpolating between data in the data profile; and
4 applying the interpolated values to the actuator wherein a specific data for
5 the actuator is not prescribed by the data profile.
6

7 Claim 18 (Currently amended): A processor-readable medium as recited
8 in claim [[1]]15, wherein printing the image comprises further instructions for:
9 interpolating between measured signals within the data profile using an at
10 least first-order equation; and
11 wherein the interpolating is a function of an angular orientation of the
12 optical disc.
13

14 Claim 19 (Currently amended): A processor-readable medium as recited
15 in claim [[1]]15, wherein printing the image comprises further instructions for:
16 interpolating between measured signals within the data profile using an at
17 least first-order equation; ~~and~~
18 wherein the interpolating is a function of a radial distance by which
19 a focal point is from a center of the optical disc.
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1 Claim 20 (Currently amended): A processor-readable medium as recited
2 in claim ~~[[1]]~~15, wherein printing the image comprises further instructions for:

3 interpolating voltage data between known levels within a voltage data look-
4 up table using a second-order equation; and

5 using the interpolated voltage data to control operation of the actuator
6 wherein a specific voltage level for the actuator is not prescribed by the voltage
7 look-up table.

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9 Claim 21 (Currently amended): A processor-readable medium as recited
10 in claim ~~[[1]]~~15, comprising instructions which configure the data profile as a
11 piece-wise continuous function.

12
13 Claim 22 (Previously presented): A processor-readable medium
14 comprising processor-executable instructions for focusing optics, the processor-
15 executable instructions comprising instructions for:

16 generating a data profile, wherein the data profile is configured to provide
17 signals for operation of an actuator, wherein the signals result in focus of the
18 optics on a label region of an optical disc;

19 printing an image on the label region of the optical disc while focusing the
20 optics by applying signals to the actuator according to the data profile; and

21 configuring the data profile as a piece-wise continuous function, wherein
22 the instructions which configure the piece-wise continuous function phase-shift
23 the piece-wise continuous function by an angle associated with a lag time
24 associated with the operation of the actuator.
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1 Claim 23 (Canceled)

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3 Claim 24 (Currently amended): A method as recited in claim ~~[[23]]~~27,
4 wherein the generating comprises:

5 applying an AC component of a signal to the actuator as the optical disc
6 turns, wherein the AC component causes the optics to pass through a focal point in
7 both directions on each cycle of the AC component; and

8 recording a signal into the data look-up table which was applied to the
9 actuator and which was associated with a SUM signal peak which resulted from
10 the passage of the optics through the focal point.

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12 Claim 25 (Original): A method as recited in claim 24, wherein the sum
13 signal peak is determined by measuring sides of the sum signal peak and averaged.

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15 Claim 26 (Currently amended): A method as recited in claim ~~[[23]]~~27,
16 additionally comprising adjusting the recorded signal by a phase shift
17 corresponding to a lag time associated with the operation of the actuator.

1 Claim 27 (Previously presented): A method for focusing optics,
2 comprising:

3 generating a data look-up table, wherein the data look-up table provides
4 signal levels for operation of an actuator which result in focus of the optics on a
5 plurality of locations within a label region of an optical disc;

6 printing an image on the label region of the optical disc while focusing the
7 optics by applying signals to the actuator according to the data look-up table;

8 calibrating the actuator to determine an angle by which the actuator lags an
9 input signal for at least one frequency; and

10 adjusting the recorded signal by the angle.

11
12 Claim 28 (Canceled)

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14 Claim 29 (Previously presented): A method for focusing optics,
15 comprising:

16 generating a data look-up table, wherein the data look-up table provides
17 signal levels for operation of an actuator which result in focus of the optics on a
18 plurality of locations within a label region of an optical disc;

19 printing an image on the label region of the optical disc while focusing the
20 optics by applying signals to the actuator according to the data look-up table; and

21 calibrating the actuator to determine an angle by which the actuator lags an
22 input signal for frequencies associated with printing the image at least two radial
23 distances from a hub of the optical disc; and

1 organizing the look-up table according to the at least two radial distances
2 and according to signals resulting in focus in a plurality of sectors of the optical
3 disc.

4
5 Claim 30 (Original): A method as recited in claim 29, wherein calibrating
6 the actuator comprises:

7 applying an AC signal to the actuator, wherein the AC signal results in the
8 actuator moving the optics back and forth through a focal point causing a plurality
9 of SUM signal peaks;

10 adjusting a DC offset to the signal until the plurality of SUM signal peaks
11 are evenly space; and

12 measuring an angle between a SUM signal peak and an associated mid-
13 point of the AC signal.

14
15 Claim 31 (Original): A method as recited in claim 29, wherein calibrating
16 the actuator comprises:

17 applying an AC signal to the actuator, wherein the AC signal results in the
18 actuator moving the optics back and forth through a focal point causing a multiple
19 recognitions of a pattern marked on the optical disc;

20 adjusting a DC offset to the signal until the multiple recognitions are evenly
21 space; and

22 measuring an angle between a time of a recognition and an associated mid-
23 point of the AC signal.

1 Claim 32 (Currently amended): A method for focusing optics,
2 comprising:

3 generating a data look-up table, wherein the data look-up table provides
4 signal levels for operation of an actuator which result in focus of the optics on a
5 plurality of locations within a label region of an optical disc; and

6 printing an image on the label region of the optical disc while focusing the
7 optics by applying signals to the actuator according to the data look-up table;

8 wherein generating the data look-up table comprises including data
9 within the look-up table associated with at least two radial distances from a
10 center of the optical disc, wherein the data associated with each radial
11 distance is phase-shifted according to a lag-time of the actuator at a
12 frequency associated with printing a portion of the image on the label
13 region of the optical disc located approximately at the radial distance.

14
15 Claim 33 (Original): A method as recited in claim [[23]]32, further
16 comprising:

17 indexing the data look-up table according to angular orientation of the
18 optical disc; and

19 fetching data from the look-up table according to the angular orientation of
20 the optical disc during the printing of the image on the label region.

21
22 Claim 34 (Original): A method as recited in claim [[23]]32, wherein the
23 data look-up table is configured as a piece-wise continuous function.
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1 Claim 35 (Canceled)

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3 Claim 36 (Currently amended): A system as recited in claim ~~[[35]]~~44,
4 wherein generating the data profile comprises:

5 logic configured for forming a look-up table with signal data, wherein the
6 signal data are associated with focusing on a plurality of locations within the label
7 region.

8
9 Claim 37 (Currently amended): A system as recited in claim ~~[[35]]~~44,
10 wherein generating the data profile comprises:

11 logic for configuring generation of a function to produce signals, wherein
12 the function associates locations within the label region with appropriate signals to
13 result in focus on the locations.

14
15 Claim 38 (Original): A system as recited in claim 37, wherein the logic for
16 configuring generation of the function comprises:

17 logic configured for generating coefficients for a Fourier series.

18
19 Claim 39 (Original): A system as recited in claim 37, wherein the logic for
20 configuring generation of the function comprises:

21 logic configured for generating coefficients for a polynomial series.
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1 Claim 40 (Currently amended): A system as recited in claim [[35]]44,
2 wherein the logic configured for generating a data profile comprises:

3 logic configured for applying an AC component of a signal to the actuator
4 as the optical disc turns, wherein the AC component causes the optics to pass
5 through a focal point in both directions on each cycle of the AC component; and

6 logic configured for recording a voltage into a voltage data look-up table
7 which was applied to the actuator and which was associated with a SUM signal
8 peak which resulted from the passage of the optics through the focal point.

9
10 Claim 41 (Original): A system as recited in claim 40, additionally
11 comprising logic configured for adjusting the recorded voltage by a phase shift
12 corresponding to a lag time associated with the operation of the actuator.

13
14 Claim 42 (Original): A system as recited in claim 40, wherein the logic
15 configured for applying the AC component of the signal comprises logic
16 configured for repeating the AC signal at a frequency which results in at least
17 eight SUM signal peaks per revolution of the optical disc.

1 Claim 43 (Original): A system as recited in claim 35, wherein the logic
2 configured for generating comprises:

3 logic configured for applying an AC component of a signal to the actuator
4 as the optical disc turns, wherein the AC component causes the optics to pass
5 through a focal point in both directions on each cycle of the AC component; and

6 logic configured for recording a voltage into a voltage data look-up table
7 within the data profile, wherein the voltage was applied to the actuator and was
8 associated with a recognition of a pattern on the optical disc which resulted from
9 the passage of the optics through the focal point.

10
11 Claim 44 (Previously presented): A system for focusing optics,
12 comprising:

13 logic configured for generating a data profile, wherein the profile is
14 configured to provide signals for operation of an actuator, wherein the signals
15 result in focus of the optics on a label region of an optical disc;

16 logic configured for printing an image on the label region of the optical disc
17 while focusing the optics by applying signals to the actuator according to the data
18 profile;

19 logic configured for calibrating the actuator to determine an angle by which
20 the actuator lags an input signal for frequencies associated with printing the image
21 at least two radial distances from a hub of the optical disc; and

22 logic configured for organizing a look-up table within the data profile
23 according to the at least two radial distances and according to voltages resulting in
24 focus in a plurality of sectors of the optical disc.

25

1 Claim 45 (Original): A system as recited in claim 44, wherein logic
2 configured for calibrating the actuator comprises:

3 logic configured for applying an AC signal to the actuator, wherein the AC
4 signal results in the actuator moving the optics back and forth through a focal
5 point causing a plurality of SUM signal peaks;

6 logic configured for adjusting a DC offset to the signal until the plurality of
7 SUM signal peaks are evenly space; and

8 logic configured for measuring an angle between a SUM signal peak and an
9 associated mid-point of the AC signal.
10

11 Claim 46 (Original): A system as recited in claim 44, wherein logic
12 configured for calibrating the actuator comprises:

13 logic configured for applying an AC signal to the actuator, wherein the AC
14 signal results in the actuator moving the optics back and forth through a focal
15 point causing multiple recognitions of a pattern on the optical disc;

16 logic configured for adjusting a DC offset to the signal until the
17 recognitions are evenly space; and

18 logic configured for measuring an angle between a recognition and an
19 associated mid-point of the AC signal.
20

21 Claim 47 (Original): A system as recited in claim 44, further comprising:

22 logic configured for moving the optics toward a hub location of the optical
23 disc; and

24 logic configured for maintaining the optical disc in a stationary condition
25 during the calibrating.

1
2 Claim 48 (Currently amended): A system for focusing optics,
3 comprising:

4 logic configured for generating a data profile, wherein the profile is
5 configured to provide signals for operation of an actuator, wherein the signals
6 result in focus of the optics on a label region of an optical disc;

7 logic configured for printing an image on the label region of the optical disc
8 while focusing the optics by applying signals to the actuator according to the data
9 profile;

10 wherein the logic configured for generating the data profile
11 comprises logic configured for including data within a look-up table within
12 the data profile, wherein the data is associated with at least two radial
13 distances from a center of the optical disc, and wherein the data associated
14 with each radial distance is phase-shifted according to a lag-time of the
15 actuator at a frequency associated with printing a portion of the image on
16 the label region of the optical disc located approximately at one of the at
17 least two radial distances.

18
19 Claim 49 (Currently amended): A system as recited in claim [[35]]48,
20 further comprising:

21 logic configured for indexing a voltage data look-up table within the data
22 profile according to angular orientation of the optical disc; and

23 logic configured for fetching voltage data from the look-up table according
24 to the angular orientation of the optical disc during the printing of the image on the
25 label region.

1
2 Claim 50 (Currently amended): A system as recited in claim [[35]]48,
3 wherein the logic configured for printing the image comprises:

4 logic configured for interpolating between voltage levels obtained from a
5 voltage look-up table within the data profile; and

6 logic configured for applying the interpolated values to the actuator
7 wherein a specific voltage level for the actuator is not prescribed by the voltage
8 look-up table.

9
10 Claim 51 (Currently amended): A system as recited in claim [[35]]48,
11 wherein the logic configured for printing the image further comprises:

12 logic configured for interpolating between voltage levels in a voltage look-
13 up table within the data profile using a first-order equation; and

14 wherein the logic configured for the interpolating is a function of an
15 angular orientation of the optical disc.

16
17 Claim 52 (Currently amended): A system as recited in claim [[35]]48,
18 wherein the logic configured for printing the image comprises:

19 logic configured for interpolating signal data between known signals
20 obtained from the data profile; and

21 logic configured for using the interpolated signals to control operation of
22 the actuator.

1 Claim 53 (Currently amended): A system as recited in claim [[35]]48,
2 additionally comprising logic configured for configuring the data profile as a
3 piece-wise continuous function.
4

5 Claim 54 (Previously presented): A system for focusing optics,
6 comprising:

7 logic configured for generating a data profile, wherein the profile is
8 configured to provide signals for operation of an actuator, wherein the signals
9 result in focus of the optics on a label region of an optical disc;

10 logic configured for printing an image on the label region of the optical disc
11 while focusing the optics by applying signals to the actuator according to the data
12 profile; and

13 logic configured for configuring the data profile as a piece-wise continuous
14 function, wherein the logic configured for configuring the piece-wise continuous
15 function phase-shifts the piece-wise continuous function by an angle associated
16 with a lag time associated with the operation of the actuator.
17

18 Claim 55 (Canceled)
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20 Claim 56 (Currently amended): An optical disc drive as recited in claim
21 [[55]]59, wherein the means for generating the data profile further comprises:

22 means for configuring a look-up table with signal data, wherein the signal
23 data are associated with focusing on locations within the label region.
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1 Claim 57 (Currently amended): An optical disc drive as recited in claim
2 [[55]]59 wherein the means for generating the data profile further comprises:

3 means for configuring a function to generate signal data, wherein the
4 function associates locations within the label region with appropriate signals.

5
6 Claim 58 (Currently amended): An optical disc drive as recited in claim
7 [[55]]59 wherein the means for generating the data profile further comprises:

8 means for applying an AC component of a signal to the actuator as the
9 optical disc turns, wherein the AC component causes the optics to pass through a
10 focal point in both directions on each cycle of the AC component; and

11 means for recording a voltage into a voltage data look-up table which was
12 applied to the actuator and which was associated with a SUM signal peak which
13 resulted from the passage of the optics through the focal point.

14
15 Claim 59 (Previously presented): An optical disc drive comprising:

16 means for generating a data profile, wherein the data profile is configured
17 to provide signals for operation of an actuator, wherein the signals result in focus
18 of the optics on a label region of an optical disc;

19 means for printing an image on the label region of the optical disc while
20 focusing the optics by applying signals to the actuator according to the data
21 profile; and

22 means for calibrating the actuator to determine an angle by which the
23 actuator lags an input signal for frequencies associated with printing the image at
24 least two radial distances from a hub of the optical disc; and
25

1 means for organizing the data profile according to the at least two radial
2 distances and according to signals resulting in focus in a plurality of sectors of the
3 optical disc.

4
5 Claim 60 (Previously presented): An optical disc drive comprising:

6 means for generating a data profile, wherein the data profile is configured
7 to provide signals for operation of an actuator, wherein the signals result in focus
8 of the optics on a label region of an optical disc;

9 means for printing an image on the label region of the optical disc while
10 focusing the optics by applying signals to the actuator according to the data
11 profile; and

12 means for including data within the data profile associated with at least two
13 radial distances from a center of the optical disc, wherein the data associated with
14 each radial distance is phase-shifted according to a lag-time of the actuator at a
15 frequency associated with printing a portion of the image on the label region of the
16 optical disc located approximately at the radial distance.

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18 Claim 61 (Currently amended): An optical disc drive as recited in claim
19 ~~[[55]]~~60 further comprising:

20 means for indexing the data profile according to an angular orientation of
21 the optical disc; and

22 means for fetching data from the data profile according to the angular
23 orientation of the optical disc during the printing of the image on the label region.

1 Claim 62 (Currently amended): An optical disc drive as recited in claim
2 ~~[[55]]60~~ wherein the means for printing further comprises:

3 means for interpolating between data in the data profile; and
4 means for applying the interpolated values to the actuator wherein a
5 specific data for the actuator is not prescribed by the data profile.
6

7 Claim 63 (Currently amended): An optical disc drive as recited in claim
8 ~~[[55]]60~~ wherein the means for printing further comprises:

9 means for interpolating between measured signals within the data profile
10 using an at least first-order equation; and wherein the means for interpolating is a
11 function of an angular orientation of the optical disc.
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